Peak Oil - the Turning Point

(photograph courtesy of Pacific Gas and Electric Company, www.pge.com)

The theory that the world's oil production rate will reach a maximum and then decline has been termed "peak oil."

"The world is not running out of oil -" but it does face "the end of the abundant and cheap oil on which all industrial nations depend."

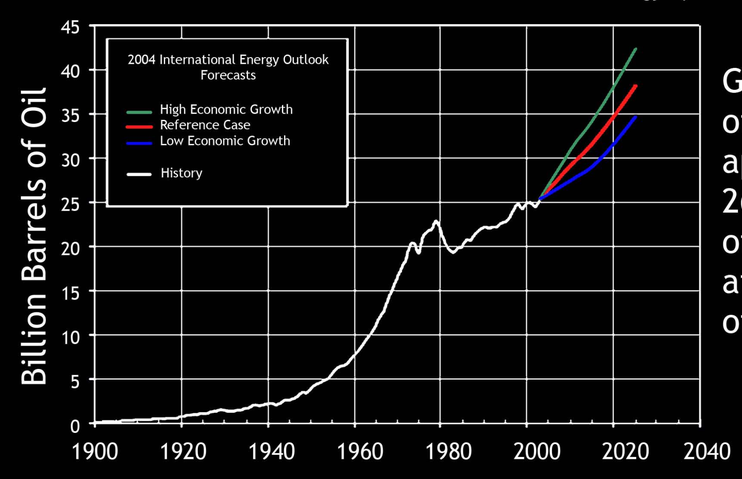
Colin J. Campbell and Jean H. Laherrere, 1998
Scientific American

When Will the World's Oil Production Peak?

Energy Information Administration

When will world production peak? EIA's short answer is not soon, but within the present century. A peak in world oil production is decades away...not years away.

(Guy Caruso, Administrator
United States Energy Information Administration, DOE, 2005)



Global oil production approached 26 billion barrels of oil per year at the end of 2003.

(Guy Caruso, Administrator
United States Energy Information Administration, DOE, 2005)

Depletion of an Exhaustible Resource

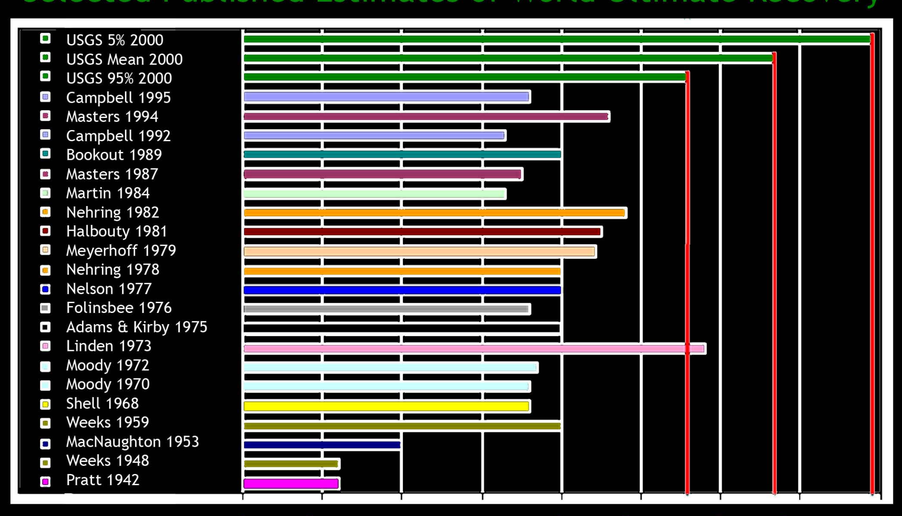
Whether from a single well, oil field, country, or the world, peak oil marks the point of maximum oil production. Peaking does not mean that oil is about to run out, only that a decline in production rate is inevitable since oil is an exhaustible resource. The volume of oil discovered every year reached an all-time high in the mid-1960s and has been declining ever since. Unless this trend is reversed, the stage is set for global oil production to peak and begin to fall.

Peak Scenarios

The "Ultimate" Unanswered Question

The size of the conventional resource base determines the peak event, which by theory occurs when a 50 percent depletion of the ultimate oil reserves is reached.

Selected Published Estimates of World Ultimate Recovery



(Guy Caruso, Administrator
United States Energy Information Administration, DOE, 2005)

Selected Published Estimates of Peak Oil Timing

When will the world reach its peak oil production? "Peak year" projections by experts vary widely, in part because there is disagreement as to the size of the ultimately recoverable oil resource. Most, however, agree that the question is not if, but when will the peak occur.

Year Published	By	Forecasted Peak Year / Range
1972	UN	by 2000
1977	Hubbert	1996
1981	World Bank	plateau around 2000
1998	IEA (WEO)	2014
1998	Campbell / Laherrere	2004
2000	EIA	2021-2167; 2037 most likely
2002	Campbell	2010
2003	Shell	after 2025
2003	Simmons	2007-2009
2004	CERA	after 2020

(excerpted from: Guy Caruso, Administrator
United States Energy Information Administration, DOE, 2005)

The Hubbert Curve

M. King Hubbert

(photograph courtesy of Scientific American)

The Hubbert peak theory, also known as **peak oil**, concerns the long-term rate of conventional oil (and other fossil fuel) extraction and depletion. M. King Hubbert proposed, in a 1956 paper he presented at a meeting of the American Petroleum Institute, that oil production in the continental United States would peak between 1965 and 1970. U.S. oil production peaked in 1971, and has been decreasing since then. Hubbert's peak theory is subject to continued discussion because of the potential effects of lowered oil production, and because of the ongoing debate over aspects of energy policy. Opinions on the effect of passing Hubbert's peak range from the faith that the market economy will produce a solution to predictions of doomsday scenarios of a global economy unable to meet its energy needs.

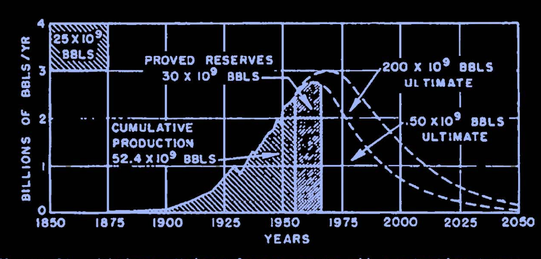
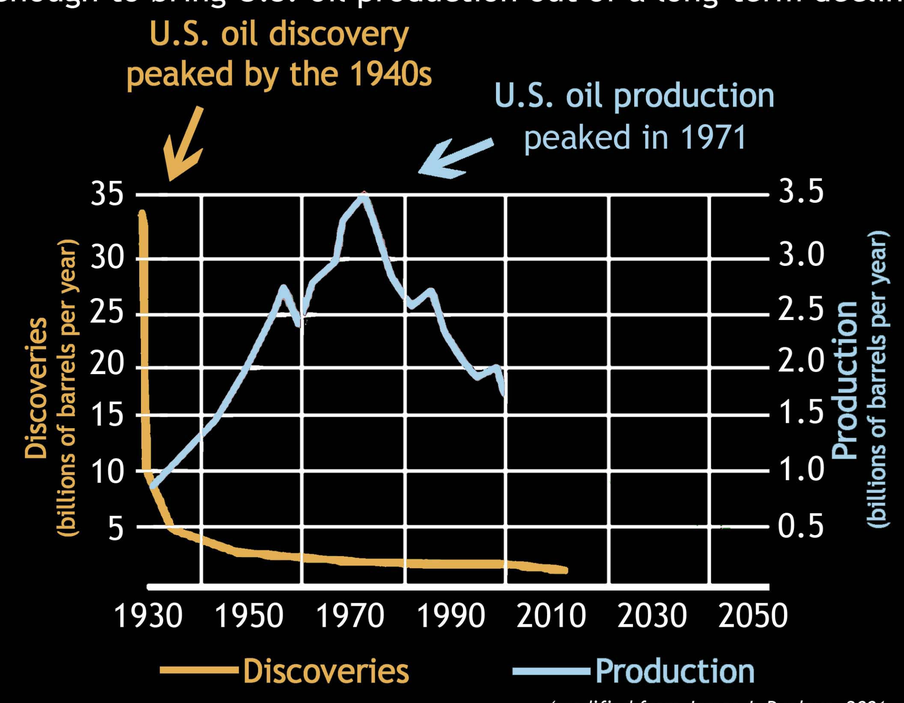


Figure 21 – Ultimate United States crude-oil production based on assumed initial reserves of 150 and 200 billion barrels.

(M. King Hubbert, "Nuclear Energy and the Fossil Fuels" March 1956)

Discovery vs. Production

Although many experts were skeptical of his prediction, Hubbert was proven correct when U.S. oil production peaked in 1971. Although the Prudhoe Bay oil field was discovered after 1971, even the great volume of oil produced from that field was not enough to bring U.S. oil production out of a long-term decline.



(modified from James J. Puplava, 2001, www.financialsense.com)

"There's no such thing as limitless,
but the limits keep being expanded all the time.
There are many offshore places that in the fullness of time will get explored... I don't know (how much oil) there is there, and in fact nobody does.

M.A. Adelman, 2004,
www.catoinstitute.com

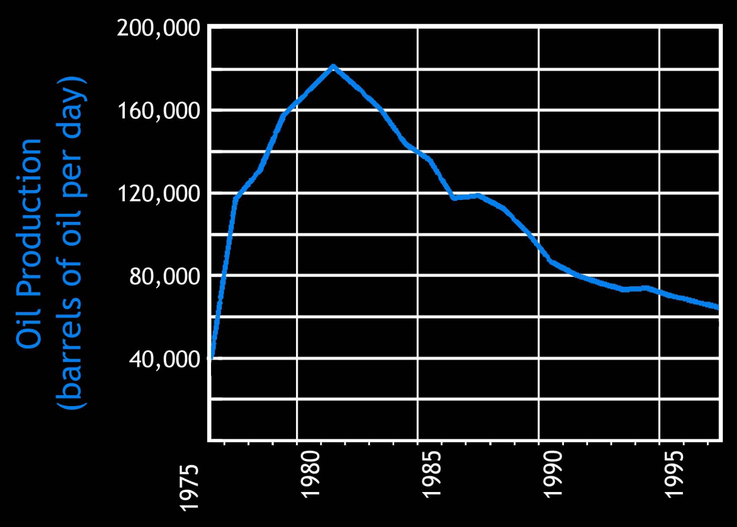
Naval Petroleum Reserve No. 1

In Production Mode

As a result of the Naval Petroleum Reserves Production Act of 1976, the Naval Petroleum Reserve No.1 (NPR-1) near Elk Hills, California, began operation in a production mode rather than a conservation mode. The field peak oil rate occurred in 1981.

Rig worker at former NPR-1, ca. 1980.

(photograph courtesy of DOE, www.25yearsofenergy.gov)



At its peak in July 1981, NPR-1 produced 181,000 barrels of oil per day.

(DOE, 2005)

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